



Roy F. Weston, Inc.
8 First National Plaza, Suite 1800
70 West Madison Street
Chicago, Illinois 60602-4206
312-434-3300 • Fax 312-434-3330

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9 July 1996

Mr. William Trumbull
Chicago Department of Environment
30 North LaSalle Street
25th Floor
Chicago, Illinois 60602

EPA Region 5 Records Ctr.



247934

Re: Results of Radio Active Anomaly Sampling
Cuneo Press Property

Dear Mr. Trumbull:

Work Order No.: 10404-024-001

On 24 April 1996, while performing a routine gamma radiation screening survey, WESTON personnel discovered an area with elevated gamma radiation readings along the Grove Street rail road tracks and Building 1 (Figure 1). The survey was conducted as part of the Phase II investigation using a Ludlum Model 19 Micro Roentgen Meter (Micro R Meter) and was being performed in accordance with standard Phase II environmental site assessment protocols.

Background gamma readings across the property ranged from 4 to 10 $\mu\text{R/hr}$ (micro roentgen per hour). Preliminary gamma radiation levels at the anomalous area were as high as 200 $\mu\text{R/hr}$ in an area approximately 30 feet by 100 feet. Additionally, one area directly along the south wall of the Premium Plastics Building was $\sim 15 \mu\text{R/hr}$. All site personnel were informed of the elevated gamma readings and instructed to remain away from the area. ✓

On 2 May 1996, a WESTON health physics representative performed a more thorough survey of the anomalous area. The area described above was determined to have two areas with readings significantly higher than background. These two areas were relatively small (1 foot diameter) and are shown on Figure 1. The highest reading was 120 $\mu\text{R/hr}$ and the next highest was 90 $\mu\text{R/hr}$. Readings in the area away from the two high readings remained relatively constant at 20 $\mu\text{R/hr}$ compared to a background range of 5 to 8 $\mu\text{R/hr}$.

Four soil samples were collected from one soil boring (SB-R-1) from the center of the area with the greatest readings. Samples were collected in intervals from 0 to 2 feet, 2 to 4 feet, 4 to 6 feet, and 6 to 8 feet. These samples were transported to Teledyne Isotopes Midwest Laboratory in Northbrook, IL for analysis. All four samples were analyzed for Gross Alpha, Gross Beta, and gamma emitting isotopes. The analytical results are attached.





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The 0 to 2 feet sample found elevated alpha and beta readings and the presence of bismuth-214 and lead-214, both radioactive daughter products in the uranium-238 decay series (See attached table). The significance for this finding is that radium-226 appears in the series before bismuth-214 and lead-214. Radium-226 has been historically used in industrial settings as a luminescent paint on dials and gauges. The 0 to 2 feet sample was further analyzed for isotopic thorium, isotopic uranium and radium-226 and radium-228. These analyses were performed to determine if the contamination was NORM - Naturally Occurring Radioactive Material or industrial contamination.

The additional analysis shows that radium-226 is present at 41 pCi/g (picoCuries per gram). Additionally, the radium is not in equilibrium with uranium and thorium suggesting that the source of the contamination is industrial.

Recommended Approach

The CDOE should immediately notify Mr. Richard Allen of the Illinois Department of Nuclear Safety at (217) 782-1322 to report these findings. Additional sampling activities should be performed to define the extent of contamination. A particularly important strategic decision is whether to treat the anomalous area as an isolated "hot spot" or treat the entire site as suspicious.

Radium clean-up criteria at uranium mill tailings sites for soils are established in 40 CFR 192 at 5 pCi/g in the 0 inch to 6 inch layer and 15 pCi/g for greater than 6 inches. It may be necessary to perform a risk assessment based on follow-up sample results and have the IEPA determine a cleanup objective for this particular site.

We suggest scheduling a meeting so we can decide on an appropriate strategy together. Please contact the undersigned at (312) 424-3300 at your earliest convenience.

Very truly yours,

ROY F. WESTON, INC.

Kevin M. Axe, P.G.
Senior Project Geologist

Warren J. Buchanan
Project Director

KMA:WJB:mem

cc: J. Van der Kloot - CDOE
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